

Chapter 6 Quiz

+1 1) Suppose in solving an equation over the interval $[0, 360)$, you reach the step $\sin(x) = -\frac{1}{2}$. Explain why this is not the correct answer. +1
 which yields $x = -30^\circ$

+2 2) Is it true that $\sin\left(\frac{11\pi}{6}\right) = -\frac{1}{2}$, and therefore $\sin^{-1}\left(-\frac{1}{2}\right) = \frac{11\pi}{6}$? Explain.
+1 Not

Solve the following equations for x over the interval $[0, 360)$

+2 3) $2\sin(x) + 3 = 4$
 $-3 \quad -3$

$2\sin x = 1 \quad \sin x = \frac{1}{2}$

+2 4) $\cos^2(x) + 2\cos(x) = -1$

$\cos^2 x + 2\cos x + 1 = 0$

$(\cos x + 1)(\cos x + 1) = 0$

+3 5) $9\sin^2(x) - 6\sin(x) = 1$

$\cos x = -1 \quad x = 180^\circ$
+1 +1

$9\sin^2 x - 6\sin x - 1 = 0$

$$\frac{6 \pm \sqrt{6^2 - 4(9)(-1)}}{2(9)} \Rightarrow \frac{6 \pm \sqrt{72}}{18} = \frac{6 \pm 6\sqrt{2}}{18} = \frac{1 \pm \sqrt{2}}{3}$$

$\sin x = \frac{1 + \sqrt{2}}{3}, \approx 0.804, 0.14$
+1

$\sin x = 0.804$

$x = 53.6^\circ, 126.4^\circ$
 $+ \frac{1}{2} \quad + \frac{1}{2}$

$\sin x = -0.14$

$x = 352^\circ, 188^\circ$
 $+ \frac{1}{2} \quad + \frac{1}{2}$



The range of $\sin^{-1}(x)$ is $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$
 -30°
 $-\frac{\pi}{6}$

+1

(40)

$$\sin \theta - \sin 2\theta = 0$$



$$\sin \theta - 2 \sin \theta \cos \theta = 0$$

$$(\sin \theta)(1 - 2 \cos \theta) = 0$$

$$\sin \theta = 0$$

$$\theta = 0^\circ, 180^\circ$$

$$\cos \theta = \frac{1}{2}$$

$$\theta = 60^\circ, 300^\circ$$

$$\textcircled{7} \cos 2x = \frac{\sqrt{3}}{2}$$

$$0 \leq x < 360$$

$$\rightarrow 0 \leq 2x < 720$$

$$\cos 2x = \frac{\sqrt{3}}{2}$$

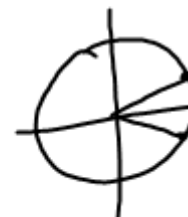
$$2x = \cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

$$2x = 30^\circ, 330^\circ, 390^\circ, 690^\circ$$

$$\frac{\pi}{6}, \frac{11\pi}{6}, \frac{13\pi}{6}, \frac{23\pi}{6}$$

$$x = 15^\circ, 165^\circ, 195^\circ, 345^\circ$$

$$\frac{\pi}{12}, \frac{11\pi}{12}, \frac{13\pi}{12}, \frac{23\pi}{12}$$



⑧

$$\cos 2x = -\frac{1}{2}$$

$$0 \leq x < 360$$

$$0 \leq 2x \leq 720$$

4π

$$2x = \cos^{-1}\left(-\frac{1}{2}\right)$$

$$2x = 120^\circ, 240^\circ, 480^\circ, 600^\circ$$

$$\frac{2\pi}{3}, \frac{4\pi}{3}, \frac{8\pi}{3}, \frac{10\pi}{3}$$

$$x = 60^\circ, 120^\circ, 240^\circ, 300^\circ$$

$$\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$$

⑮

$$0 \leq \frac{x}{2} < 180$$

$$\sin \frac{x}{2} = \sqrt{2} - \sin \frac{x}{2}$$

$$+ \sin \frac{x}{2} \quad + \sin \frac{x}{2}$$

$$\frac{2 \sin \frac{x}{2}}{2} = \frac{\sqrt{2}}{2}$$

$$\sin \frac{x}{2} = \frac{\sqrt{2}}{2}$$

$$\frac{x}{2} = \sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$$

$$\frac{x}{2} = 45^\circ, 135^\circ$$

$$x = 90^\circ, 270^\circ$$

$$\frac{2 \sin^{-1}(x)}{2} = \frac{\pi}{2}$$

~~$$\sin^{-1}(x) = \frac{\pi}{2}$$~~

$$x = \sin\left(\frac{\pi}{2}\right)$$

$$x = 1$$

$$\cos^{-1}(x) = \sin^{-1}\left(\frac{1}{2}\right)$$

~~$$\cos^{-1}(x) = 30^\circ$$~~

$$x = \cos(30^\circ)$$

$$x = \frac{\sqrt{3}}{2}$$

- 6.4 #23-32
- Give me all tests
- Give me 6.3